

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/905,040	DEMOS, GARY A.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Shawn S. An	2613	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_\_.
2. ☒ The allowed claim(s) is/are 86-120.
3. ☒ The drawings filed on 12 July 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

**Examiner's Amendment**

1. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

**IN THE CLAIMS:**

**A)** Please cancel claims 1-85.

**B)** Please amend (add) claims 86-120 as follows:

86. (new) A method for coding video frames in a video compression system comprising:

receiving an input image corresponding to a video frame, wherein the input image comprises a sample, and wherein the sample is represented by a number of bits;  
providing a plurality of coding modes, including a first coding mode and a second coding mode;

providing a plurality of bias values, including a first bias value and a second bias value, wherein the first bias value corresponds to the first coding mode and the second bias value corresponds to the second coding mode, and wherein the second bias value is different from the first bias value;

scaling each of the plurality of bias values as a function of the number of bits representing the sample of the input image;

providing a first coding mode sum corresponding to the first coding mode, comprising adding the first bias value and a match measure;

providing a second coding mode sum corresponding to the second coding mode, comprising adding the second bias value and the match measure; and

selecting a preferred coding mode from the plurality of coding modes, comprising selecting a minimum of a plurality of coding mode sums, wherein the plurality of coding mode sums includes the first coding mode sum and the second coding mode sum.

87. (new) The method of claim 86, wherein the number of bits representing the sample of the input image is 10 bits.

88. (new) The method of claim 86, wherein the video compression system is an MPEG-2 video compression system.

89. (new) The method of claim 86, wherein the selecting the preferred coding mode is performed by an MPEG-2 codec.

90. (new) The method of claim 86, wherein the selecting the preferred coding mode is performed by a first codec, the first codec being designed with the assumption that the number of bits representing the sample of the input image is 8 bits.

91. (new) The method of claim 90, wherein the number of bits representing the sample of the input image is 10 bits.

92. (new) The method of claim 86, wherein the first bias value is always used to calculate the first coding mode sum corresponding to the first coding mode, and wherein the second bias value is always used to calculate the second coding mode sum corresponding to the second coding mode.

93. (new) The method of claim 86 wherein the match measure is a sum of absolute differences.

94. (new) The method of claim 86, wherein the scaling each of the plurality of bias values comprises multiplying each bias value by four.

95. (new) The method of claim 94, wherein the multiplying each bias value by four comprises left-shifting each bias value by two bits.

96. (new) The method of claim 86, wherein the scaling each of the plurality of bias values is performed automatically.

97. (new) An apparatus, stored on a computer-readable medium, for coding video frames in a video compression system, the apparatus comprising instructions for causing a computer to:

- receive an input image corresponding to a video frame, wherein the input image comprises a sample, and wherein the sample is represented by a number of bits;

- provide a plurality of coding modes, including a first coding mode and a second coding mode;

- provide a plurality of bias values, including a first bias value and a second bias value, wherein the first bias value corresponds to the first coding mode and the second bias value corresponds to the second coding mode, and wherein the second bias value is different from the first bias value;

- scale each of the plurality of bias values as a function of the number of bits representing the sample of the input image;

- provide a first coding mode sum corresponding to the first coding mode, comprising adding the first bias value and a match measure;

- provide a second coding mode sum corresponding to the second coding mode, comprising adding the second bias value and the match measure; and

- select a preferred coding mode from the plurality of coding modes, comprising selecting a minimum of a plurality of coding mode sums, wherein the plurality of coding mode sums includes the first coding mode sum and the second coding mode sum.

98. (new) The apparatus of claim 97, wherein the number of bits representing the sample of the input image is 10 bits.

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99. (new) The apparatus of claim 97, wherein the video compression system is an MPEG-2 video compression system.

100. (new) The apparatus of claim 97, wherein the instructions that cause the computer to select the preferred coding mode comprise instructions that cause the computer to use an MPEG-2 codec.

101. (new) The apparatus of claim 97, wherein the instructions that cause the computer to select the preferred coding mode comprise instructions that cause the computer to use a first codec, the first codec being designed with the assumption that the number of bits representing the sample of the input image is 8 bits.

102. (new) The apparatus of claim 101, wherein the number of bits representing the sample of the input image is 10 bits.

103. (new) The apparatus of claim 97, wherein the first bias value is always used to calculate the first coding mode sum corresponding to the first coding mode, and wherein the second bias value is always used to calculate the second coding mode sum corresponding to the second coding mode.

104. (new) The apparatus of claim 97, wherein the match measure is a sum of absolute differences.

105. (new) The apparatus of claim 97, wherein the instructions that cause the computer to scale each of the plurality of bias values comprise instructions that cause the computer to multiply each bias value by four.

106. (new) The apparatus of claim 105, wherein the instructions that cause the computer to multiply each bias value by four comprise instructions that cause the computer to left-shift each bias value by two bits.

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107. (new) The apparatus of claim 97, wherein the instructions that cause the computer to scale each of the plurality of bias values comprise instructions that cause the computer to automatically scale each of the bias values.

108. (new) A system for coding video frames in a video compression system comprising:

- means for receiving an input image corresponding to a video frame, wherein the input image comprises a sample, and wherein the sample is represented by a number of bits;

- means for providing a plurality of coding modes, including a first coding mode and a second coding mode;

- means for providing a plurality of bias values, including a first bias value and a second bias value, wherein the first bias value corresponds to the first coding mode and the second bias value corresponds to the second coding mode, and wherein the second bias value is different from the first bias value;

- means for scaling each of the plurality of bias values as a function of the number of bits representing the sample of the input image;

- means for providing a first coding mode sum corresponding to the first coding mode, comprising means for adding the first bias value and a match measure;

- means for providing a second coding mode sum corresponding to the second coding mode, comprising means for adding the second bias value and the match measure; and

- means for selecting a preferred coding mode from the plurality of coding modes, comprising means for selecting a minimum of a plurality of coding mode sums, wherein the plurality of coding mode sums includes the first coding mode sum and the second coding mode sum.

109. (new) The system of claim 108, wherein the number of bits representing the sample of the input image is 10 bits.

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110. (new) The system of claim 108, wherein the video compression system is an MPEG-2 video compression system.

111. (new) The system of claim 108, wherein the means for selecting the preferred coding mode comprises an MPEG-2 codec.

112. (new) The system of claim 108, wherein the means for selecting the preferred coding mode is comprises a first codec, the first codec being designed with the assumption that the number of bits representing the sample of the input image is 8 bits.

113. (new) The system of claim 112, wherein the number of bits representing the sample of the input image is 10 bits.

114. (new) The system of claim 108, wherein the first bias value is always used to calculate the first coding mode sum corresponding to the first coding mode, and wherein the second bias value is always used to calculate the second coding mode sum corresponding to the second coding mode.

115. (new) The system of claim 108 wherein the match measure is a sum of absolute differences.

116. (new) The system of claim 108, wherein the means for scaling each of the plurality of bias values comprises multiplying each bias value by four.

117. (new) The system of claim 116, wherein the means for multiplying each bias value by four comprises means for left-shifting each bias value by two bits.

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118. (new) The method of claim 108, wherein the means for scaling each of the plurality of bias values comprises means for automatically scaling each of the plurality of bias values.

119. (new) A system comprising:  
means for selecting a coding precision as represented by a number of bits;  
means for checking whether a coding mode bias is to be used;  
means for selecting a bias amount for a coding mode decision for a macroblock, if the coding mode bias is to be used;  
means for automatically scaling the bias amount to match the coding precision, if the coding mode bias is to be used; and  
means for applying the scaled bias amount when selecting a coding mode for encoding the macroblock, if the coding mode bias is to be used;  
means for encoding the macroblock with a first one of a plurality of candidate coding modes to determine a number of bits created by the first candidate coding mode, if the coding mode bias is not to be used;  
means for decoding the macroblock to determine a decompressed result from the first candidate coding mode, if the coding mode bias is not to be used;  
means for making a quality measurement of the decompressed result, if the coding mode bias is not to be used; and  
means for selecting a best coding mode from the plurality of candidate coding modes, if the coding mode bias is not to be used.

120. (new) The system of claim 119 wherein said means for selecting the best coding mode comprises means for weighing the number of bits created by the first candidate coding mode against the quality measurement of the decompressed result.

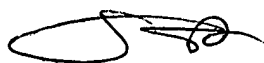


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**REMARKS:**

Claims 1-85 have been canceled and claims 86-120 have been newly added (amended) as above, as authorized by Applicant's attorney, Bing Ai (43,312) on June 2, 2005.

2. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Shawn S An whose telephone number is 571-272-7324.



**SHAWN AN**  
**PRIMARY EXAMINER**

6/2/05

### **Reasons for Allowance**

1. Claims 86-120 are allowed after entering the Examiner's Amendment as discussed in the Examiner's Amendment section.

2. The following is an Examiner's statement of reasons for allowance.

**Claims 86-118** recite novel features of a system/method and/or an apparatus, stored on a computer-readable medium, for coding video frames in a video compression system, comprising:

means for receiving an input image corresponding to a video frame, wherein the input image comprises a sample, and wherein the sample is represented by a number of bits;

means for providing a plurality of coding modes, including a first coding mode and a second coding mode;

means for providing a plurality of bias values, including a first bias value and a second bias value, wherein the first bias value corresponds to the first coding mode and the second bias value corresponds to the second coding mode, and wherein the second bias value is different from the first bias value;

means for scaling each of the plurality of bias values as a function of the number of bits representing the sample of the input image;

means for providing a first coding mode sum corresponding to the first coding mode, comprising means for adding the first bias value and a match measure;

means for providing a second coding mode sum corresponding to the second coding mode, comprising means for adding the second bias value and the match measure; and

means for selecting a preferred coding mode from the plurality of coding modes, comprising means for selecting a minimum of a plurality of coding mode sums, wherein the plurality of coding mode sums includes the first coding mode sum and the second coding mode sum.

**Claims 119-120** recite novel features of a system comprising:  
means for selecting a coding precision as represented by a number of bits;  
means for checking whether a coding mode bias is to be used;  
means for selecting a bias amount for a coding mode decision for a macroblock,  
if the coding mode bias is to be used;  
means for automatically scaling the bias amount to match the coding precision, if  
the coding mode bias is to be used; and  
means for applying the scaled bias amount when selecting a coding mode for  
encoding the macroblock, if the coding mode bias is to be used;  
means for encoding the macroblock with a first one of a plurality of candidate  
coding modes to determine a number of bits created by the first candidate coding mode,  
if the coding mode bias is not to be used;  
means for decoding the macroblock to determine a decompressed result from  
the first candidate coding mode, if the coding mode bias is not to be used;  
means for making a quality measurement of the decompressed result, if the  
coding mode bias is not to be used; and  
means for selecting a best coding mode from the plurality of candidate coding  
modes, if the coding mode bias is not to be used.

The prior art of records fail to anticipate or make obvious the novel features  
(emphasis added on underlined limitations) as discussed above.

Any comments considered necessary by applicant must be submitted no later  
than the payment of the issue fee and, to avoid processing delays, should preferably  
accompany the issue fee. Such submissions should be clearly labeled "Comments on  
Statement of Reasons for Allowance."

***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

A) Eifrig et al (5,991,447), Prediction and coding of bi-directionally predicted video object planes for interlaced digital video.

B) Zhang et al (6,449,312 B1), Method of estimating motion in interlaced video.

4. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

5. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S. An* whose telephone number is 571-272-7324.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**SHAWN AN  
PRIMARY EXAMINER**

6/2/05